

Determinants Affecting the Adoption of E-commerce and Its Impact on Organisational Performance of SMEs in Sri Lanka

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Abstract: The Internet has become the best innovative driver in the fourth industrial revolution, transforming businesses into a technological era with speed and cost-effectiveness. E-commerce is one of the modern business strategies used by many companies to expand their market without limiting its geographical boundaries. This business strategy was initially used by companies in developed countries and eventually adopted by developing countries. Sri Lanka is a developing country and e-commerce penetration is far below other countries in the region. Perceived benefits, transformational leadership, and competitive pressure are the influencing factors of e-commerce adoption. The Technology-Organization-Environment and Diffusion of Innovations theories were used as the base of this research, and 350 samples were collected from the senior managers of SMEs. All factors significantly influenced e-commerce adoption and that positively affected the organisational performance of SMEs in Sri Lanka.

Keywords: Adoption of E-commerce, Influencing Factors, Determinants of e-commerce, e-Business Adoption

Introduction

In the fourth industrial or technology revolution, organisations have changed their growth strategies with innovative technological adoptions (Fonseka *et al.*, 2020). The Internet has transformed the offline business environment into online businesses, which has reduced time,

cost, and distance. This new instrument facilitates communication across the globe cost-effectively and super-fast. It opened the door to a unique aspect of trade without limiting it to geographical boundaries ([Hidayati, Permatasari & Fajry, 2019](#)). It is called "electronic commerce", which refers to exchanging goods and services between parties via computer networks ([Wen & Guy, 2019](#)). E-commerce is the modern trending art of trading method in the 21st century, and it is one of the effective growth strategies in business. Işoraitė & Miniotienė ([2018](#)) have explained that e-commerce is a business in which an online platform is used to enhance profitability through its activities and communicate with many individuals and entities at the same time. This trending platform creates opportunities for business owners and individuals to tap untapped markets within a short period of time and cost-effectively.

With the expansion of smart-device usage, people are addicted to using online platforms for their day-to-day lives and, as a result, e-commerce penetration has gone up globally ([Chmielarz & Parys, 2018](#)). This innovative adoption utilized by many organisations globally has significantly affected the global economy by increasing cross-border revenue. The COVID-19 outbreak has accelerated the growth of e-commerce globally ([UNCTAD, 2021](#)). Statista ([2021](#)) indicates the global picture of e-commerce revenue, which reached 2.38 trillion US Dollars in 2017. The forecasted global e-commerce revenue is 6.54 trillion US Dollars for the year 2024. It is an enormous growth of 175% revenue within six years.

Furthermore, the highest annual expected e-commerce revenue growth (2019-2023) rate of 17.8% in the Asian region is indicated by India, and the lowest rate of 9.1% is by Sri Lanka ([Statista, 2021](#)). The level of e-commerce usage is lagging behind in developing countries compared to developed countries. Developed countries initially adopted e-commerce, and they are harvesting the real benefit of it, more than developing countries ([Xuhua, Chosniel Elikem & Akaba, 2019](#)). The developing countries faced many issues when adopting e-commerce, such as the lack of resources, the management perception, lack of government support, or industry pressures, which are issues common to many developing countries ([Dahbi & Benmoussa, 2019](#)). The e-commerce penetration of Sri Lanka is shallow in the region since the country is still in the developing stage.

Previous researchers have described SMEs as the backbone of any economy ([Kuruwitaarachchi et al., 2020](#)). The Ministry of Industry and Commerce of Sri Lanka has highlighted that more than 75% of the enterprises are SMEs and that they contribute more than 52% to the Gross Domestic Product (GDP) of the country. The service sector is the most significant contributor to the national GDP, which is nearly 60%. The major contributors in the service sector are banking and finance, tourism, telecommunication, IT and related services, and retail sectors ([Department of Census and Statistics, 2020](#)).

The statistics revealed that Sri Lankan entrepreneurs are still reluctant to adopt e-commerce for their businesses. This is one of the biggest issues that Sri Lankan SMEs are currently facing when competing in the global market. This strategic weakness was highlighted with the COVID-19 outbreak in Sri Lanka. Therefore, the adoption of e-commerce by SMEs is extremely important in developing countries like Sri Lanka. Previous researchers have found many factors influencing the adoption of e-commerce in different contexts, but transformational leadership is not widely studied in such studies. Thus, this study is important for entrepreneurs to understand the significance of e-commerce adoption, and for regulatory bodies to amend their policies where necessary, to encourage SMEs to adopt e-commerce. Hence this study aims to address the following research questions:

- a. What is the most influencing factor which affects the adoption of e-commerce by SMEs?
- b. How does the adoption of e-commerce impact the organisational performance of SMEs?

Literature Review

The adoption of e-commerce in SMEs is a firm level of study. Various technological adoptions or acceptance models were introduced by multiple researchers and applied by them in different contexts for technology adoption studies ([Fonseka et al., 2020](#)).

The Technology-Organization-Environment (TOE) framework ([Tornatzky & Fleischer, 1990](#)) identified three parts of an organisational context that influence the adoption and implementation of technological innovation. The technological factor associates with both the internal and external technologies that are relevant to the firm, which includes inter-organisational current practices, equipment of the firm, and available technologies external to the firm. The organisational factor refers to the descriptive measures about the organisation and includes the scope, size, and management structure. The environmental factor refers to the area in which a firm conducts its business, which consists of its industry, competitors, and government involvement. The organisation-level theory of Diffusion of Innovations (DOI) ([Rogers, 1995](#)) explained that the innovativeness is related to three elements. The leader characteristics described the leaders' attitude towards innovative change. The internal characteristics of an organisational structure referred to the centralization of power and control, complexity of members, formalization, interconnectedness, and organisational slack. The external characteristics refer to system openness. Parasuraman ([2000](#)) introduced a Technology Readiness Index (TRI), to measure the beliefs and thoughts of using new technology in general. There are two different perceptions of the use of technology at the individual and firm levels. The positive view comprises optimism and innovativeness, and the negative view consists of discomfort and insecurity. In the recent past, Sanchez-Torres &

Juarez-Acosta ([2019](#)) introduced an Integrated Model for the Adoption of E-commerce among SMEs (IMAES) and the model integrated the theories of contingency, DOI, and the Technology Adoption Model (TAM).

Nevertheless, Sánchez-Torres, Rojas Berrío & Ortiz Rendón ([2021](#)) explained TOE theory commonly used by many researchers for e-commerce adoption studies in different contexts. Therefore, TOE and DOI theories were used as the foundation, since this is a firm-level of study. Perceived benefits represent the technological context, and competitive pressure represents the environmental context of the TOE theory. Similarly, transformational leadership relates to the leader characteristics of DOI theory. Moreover, Fonseka *et al.* ([2020](#)) explained that, during the last decade, the majority of researchers have used TOE and DOI theories for technology adoptions, especially in e-commerce technology adoption at the firm-level of studies in different contexts in the world.

E-commerce in developing countries

E-commerce has transformed businesses into an electronic era without limiting them to their geographical boundaries. Researchers pointed out that, due to many reasons, such as lack of basic infrastructure, inadequate socio-economic conditions, and national strategies imposed by the governments in developing countries, SMEs are delaying the adoption of e-commerce ([Wen & Guy, 2019](#)). E-commerce adoption is a process, which initially starts with simple technology-based activities and gradually changes to a more complex and integrated system ([Xuhua, Chosniel Elikem & Akaba, 2019](#)). Effective adoption and utilization of e-commerce contribute to tangible and intangible benefits with regards to the growth of SMEs in developing countries ([Ibrahim, Turyakira & Katumba, 2018](#)). The use of e-commerce affects gaining a competitive advantage in the global environment, and it allows SMEs to secure new market opportunities ([Xuhua, Chosniel Elikem & Akaba, 2019](#)). E-commerce adoption impacted marketing activities such as improved penetration internationally and the conduct of B2B or B2C transactions ([Lee, 2021](#)). Mahliza ([2019](#)) elaborates how the adoption of e-commerce affects an increase in profitability, growth in sales, and expansion of the market, which ultimately increases the business performance of SMEs. Nevertheless, SMEs in developing countries are still struggling to adopt e-commerce due to many reasons.

Technological context

The technological context refers to the internal and external technological infrastructure and its impact when adopting technological innovation or e-commerce in an organisation, and technological context has a positive influence on e-business adoption ([Sánchez-Torres, Rojas Berrío & Ortiz Rendón, 2021](#); [Hadi Putra & Santoso, 2020](#); [Kuruwitaarachchi *et al.*, 2020](#);

[Dahbi & Benmoussa, 2019](#)). There are many factors under the technological context, such as relative advantage, perceived risk, compatibility, simplicity, observability, perceived usefulness, perceived facility, and security concerns ([Sánchez-Torres, Rojas Berrío & Ortiz Rendón, 2021](#); [Hadi Putra & Santoso, 2020](#); [Kuruwitaarachchi et al., 2020](#); [Abed, 2020](#)). Perceived benefits influence e-commerce adoption that refers to the degree of acceptance of the possible advantages that e-commerce technology can provide for the organisation ([Mahliza, 2019](#); [Govinnage & Sachitra, 2019](#); [Alnaser, Saeed & Alrawashedh, 2018](#)). [Ezzaouia & Bulchand-Gidumal \(2020\)](#) explained that perceived benefits significantly influenced IT adoption intention, which is associated with marketing benefits, management benefits, and competitive advantage. The characteristics of innovation are vital in the technological adoption environment including perceived relative advantage and its benefits ([Kuruwitaarachchi et al., 2020](#); [Hidayati, Permatasari & Fajry, 2019](#)). [Govinnage & Sachitra \(2019\)](#) explained that the perceived benefit refers to how the e-commerce adoption fits with the internal technical infrastructure. [Mahliza \(2019\)](#) pointed out that perceived benefit is the most influencing factor of e-commerce adoption. Hence, it is worth testing the impact of perceived benefits on the adoption of e-commerce among SMEs in Sri Lanka, since it has been validated in many different contexts ([Ezzaouia & Bulchand-Gidumal, 2020](#); [Hadi Putra & Santoso, 2020](#); [Kuruwitaarachchi et al., 2020](#); [Govinnage & Sachitra, 2019](#); [Dahbi & Benmoussa, 2019](#); [Mahliza, 2019](#)).

H1: Perceived benefits influence the adoption of E-commerce among SMEs in Sri Lanka.

Organisational context

The organisational context refers to the internal environment of an organisation that significantly influences the adoption of innovation ([Abed, 2020](#); [Hadi Putra & Santoso, 2020](#)). There are several factors categorized under the organisational context, such as top management support, firm size, organisational readiness, financial resources, capabilities of the internal staff, and knowledge of the senior managers ([Ezzaouia & Bulchand-Gidumal, 2020](#); [Abed, 2020](#); [Hadi Putra & Santoso, 2020](#); [Dahbi & Benmoussa, 2019](#)). [Hidayati, Permatasari & Fajry \(2019\)](#) explained the characteristics of decision-makers are vital in technological adoption that include the level of education of the decision-maker, the person's level of position in the firm, and the attitude of the person. The decision-maker's knowledge of technology and that person's leadership style is vital ([Okundaye, Fan & Dwyer, 2019](#)). The leadership style has been identified as an essential tool for an organisation to be successful, especially in the current business economy of organisations ([Hickman & Akdere, 2018](#)), which creates an innovative atmosphere within an organisation ([Xie et al., 2018](#)). [Bass \(1985\)](#) has explained two main leadership styles operating in a business environment: transformational

and transactional leadership styles. Further, the transactional leadership style facilitates a reward system for the employees to reach specific goals. In contrast, the transformational leadership style transforms employees to adopt innovative culture through aspirations, attitudes, morality, and values. Transformational leadership style builds trust between leaders and team members and creates an innovative atmosphere within the organisation to adopt innovative technologies, such as e-commerce ([Okundaye, Fan & Dwyer, 2019](#); [Xie et al., 2018](#)). The transformational leadership style is commonly used in many different contexts and is the most important style for leaders of SMEs ([Okundaye, Fan & Dwyer, 2019](#)). Hence, it is worth examining the impact of transformational leadership style on the adoption of e-commerce in SMEs in Sri Lanka.

H2: Transformational Leadership Style influencing the adoption of E-commerce among SMEs in Sri Lanka.

Environmental context

The environmental context refers to the external involvement or influence from outside parties, such as government support or involvement, competitors' pressure, suppliers' pressure, customers' pressure, and other related market forces, when adopting innovative technologies to the organisation ([Sánchez-Torres, Rojas Berrío & Ortiz Rendón, 2021](#); [Ezzaouia & Bulchand-Gidumal, 2020](#); [Abed, 2020](#); [Sanchez-Torres & Juarez-Acosta, 2019](#); [Govinnage & Sachitra, 2019](#)). On most occasions, the customers or suppliers can create pressure on the organisation to adopt innovative technology ([Ezzaouia & Bulchand-Gidumal, 2020](#); [Abed, 2020](#)). Many international companies frequently pushed their branches and suppliers to adopt e-commerce technology to enhance their global production network ([Ezzaouia & Bulchand-Gidumal, 2020](#); [Alnaser, Saeed & Alrawashedh, 2018](#)). When competitors start using e-commerce for their business, firms are forced to adopt e-commerce technology more widely to gain competitive advantages ([Dahbi & Benmoussa, 2019](#); [Govinnage & Sachitra, 2019](#); [Ezzaouia & Bulchand-Gidumal, 2020](#)). When there is a higher level of competition within the industry, an automatic pressure is generated on individual organisations to adopt e-commerce to survive in the competitive market ([Alnaser, Saeed & Alrawashedh, 2018](#)). Hence, it is vital to test the competitive pressure impacts on the adoption of e-commerce among SMEs in Sri Lanka, since it is validated by many scholars in different contexts ([Ezzaouia & Bulchand-Gidumal, 2020](#); [Sánchez-Torres, Rojas Berrío & Ortiz Rendón, 2021](#); [Abed, 2020](#); [Govinnage & Sachitra, 2019](#); [Hidayati, Permatasari & Fajry, 2019](#); [Dahbi & Benmoussa, 2019](#); [Alnaser, Saeed & Alrawashedh, 2018](#)).

H3: Competitive pressure influences the adoption of E-commerce among SMEs in Sri Lanka.

Adoption of e-commerce impact on organisational performance

E-commerce is an important tool in business practices in the current competitive environment, and it is significantly affecting the effectiveness and efficiency of trade ([Hidayati, Permatasari & Fajry, 2019](#)). Performance is the ultimate result of the effectiveness and efficiency of the organisational activities and innovativeness in developing new processes or a product by using the latest technology, which affects the enhancement of organisational performance ([Durst, Hinteregger & Zieba, 2019](#)). Hadi Putra & Santoso ([2020](#)) elaborated that performance can be measured in terms of financial and non-financial. Further, it can be measured in three ways: business performance, innovative performance, and operational performance ([Kuruwitaarachchi et al., 2020](#)). Technology adoption affects the overall performance of an organisation ([Ammirato et al., 2019](#)). Furthermore, with the rapid growth of technology-based innovative strategies in an organisational context, customer satisfaction on online transactions has become a challenging task of the e-commerce industry, which leads to the firm's performance ([Vakulenko et al., 2019](#)). Hence, it is essential to examine the adoption of e-commerce effects on SMEs' organisational performance in Sri Lanka.

H4: Adoption of e-commerce influencing the organisational performance of SMEs in Sri Lanka.

Methodology

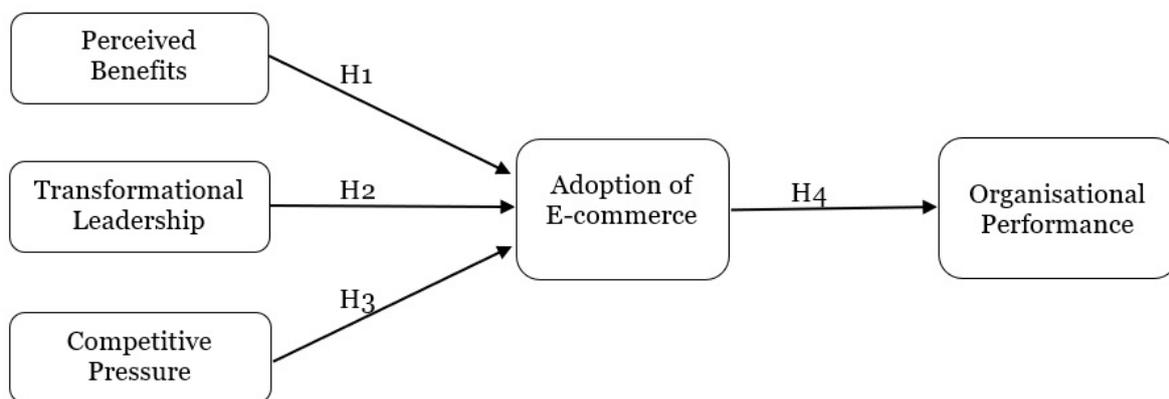


Figure 1. Conceptual Framework (Source: Author's elaboration)

TOE and DOI theories have been utilized as the foundation of the conceptual model of e-commerce adoption of SMEs. After a critical evaluation of the literature, the researcher identified perceived benefits, transformational leadership, and competitive pressure influencing the adoption of e-commerce among SMEs, and these factors represent the technological, organisational, and environmental contexts. Moreover, it was identified through empirical literature that e-commerce adoption impacts organisational performance.

Thus, the conceptual model shown in Figure 1 was developed to examine the perception of senior managers among SMEs in Sri Lanka.

Sampling and procedure

The samples were collected from the senior managers and owners of SMEs in Sri Lanka, since the unit of analysis is individual companies. The structured questionnaire was circulated among SMEs using electronic methods (e-mails and LinkedIn), and one response was collected from each company. A simple random sampling method was used to collect data: 575 questionnaires were circulated, and 350 samples were collected. SPSS was used to analyse the descriptive and inferential statistics, and AMOS ([Zainudin Awang, 2015](#)) was used to confirm the theory and test hypotheses.

Instrument development

The questionnaire consisted of two parts. Part “A” was related to the descriptive data, and part “B” represented the variables of the study. The instrument was developed by adapting items from previous similar studies ([Sanchez-Torres & Juarez-Acosta, 2019](#); [Mahliza, 2019](#); [Dahbi & Benmoussa, 2019](#); [Sattayaraksa & Boon-Itt, 2018](#); [Xuhua, Chosniel Elikem & Akaba, 2019](#); [Hidayati, Permatasari & Fajry, 2019](#)) to identify the perception of SMEs when adopting e-commerce. A five-point Likert scale was used to measure the questionnaire and was validated by two university academics and one industry expert.

Table 1 elaborates the variables, the instruments used to measure those variables, and the mean values of each item. Perceived benefits, transformational leadership, competitive pressure, and organisational performance were measured by using eight (8) instruments in each construct, and adoption of e-commerce was measured by using ten (10) instruments.

Table 1. Operationalisation

Factor	Instrument		Mean
Perceived Benefits (PB)	PBo1	The use of e-commerce simplifies work routine	4.22
	PBo2	Helps to increase the online traffic to the website	4.02
	PBo3	Improves the communication process	4.23
	PBo4	Compatible with our industrial practices	4.03
	PBo5	Helps to enhance staff satisfaction and ease of use	4.08
	PBo6	Accelerates the work process to complete faster	4.27
	PBo7	Enhances the staff work effectiveness	4.17
	PBo8	Flexible and easy to interact with global markets	4.36
Transformational Leadership (TR)	TLO1	Demonstrates high standards of ethical and moral conduct	4.09
	TLO2	Motivates the staff by communicating the vision to be achieved	4.20

Factor	Instrument		Mean
	TL03	Shows the intention towards adoption of e-commerce	4.11
	TL04	Creates the adoptive culture in an organisation towards e-commerce	4.07
	TL05	Employees are appreciated by the CEO for technological innovation	4.19
	TL06	Capable of guiding the staff and motivate them for innovative adaptation	4.11
	TL07	Emphasizes the need of technological innovation for the company growth	4.25
	TL08	The company strategy has a priority on various types of innovations set by the leader	4.13
Competitive Pressure (CP)	CP01	Business partners requested to adopt e-commerce	3.75
	CP02	The company experienced competitive pressure to adopt e-commerce	3.77
	CP03	The company has experienced of competitive disadvantage without adopting e-commerce	3.68
	CP04	The intensity of rivalry among competitors in the industry, push us to adopt e-commerce	3.79
	CP05	Easy for our customers to switch to another company for their easiness	3.65
	CP06	Competitors are doing business using e-commerce	3.82
	CP07	Industry is pressurizing us to adopt e-commerce	3.81
	CP08	Local authorities are pressurizing us to adopt e-commerce	3.65
Adoption of Ecommerce (AE)	AE01	Affecting to expand market share of the company	4.15
	AE02	Enhances the operational efficiency	4.23
	AE03	Helps to improve distribution channels	4.25
	AE04	Helps to create effective partnerships with business contacts	4.21
	AE05	Affecting to increase competitive advantages	4.25
	AE06	Provides new business opportunities	4.35
	AE07	Allows the accomplishment of specific online tasks more quickly	4.27
	AE08	Sellers and buyers have a positive attitude towards e-commerce	4.08
	AE09	Easy to touch, untapped markets by adopting of e-commerce	4.25
	AE10	Able to improve customer satisfaction	4.18
Organisational Performance (OP)	OP01	Enhance the global market reputation	4.33
	OP02	Expand the geographical reach	4.37
	OP03	Expand the trade	4.35
	OP04	Constantly grow the market	4.30
	OP05	Increase profitability of the company	4.20

Factor	Instrument		Mean
	OPO6	Increase the number of sales transactions	4.28
	OPO7	Increase the sales volume	4.26
	OPO8	Increase the return on sales	4.12

Source: Authors

Results and Discussion

Results

Table 2. Descriptive Statistics of the Respondents

Characteristic	Range	Respondents	%
Gender	Male	228	65.1%
	Female	122	34.9%
Age	20–30	23	6.6%
	31–40	139	39.7%
	41–50	159	45.4%
	51–60	29	8.3%
Education	Advanced Level	24	6.9%
	Diploma Level	22	6.3%
	Bachelor's Degree	144	41.1%
	Master's Degree	137	39.1%
	Doctoral Degree	8	2.3%
Length of Operation	Professional Qualification	15	4.3%
	< 5 Yrs	46	13.1%
	06–10 Yrs	69	19.7%
	11–15 Yrs	143	40.9%
	16–20 Yrs	59	16.9%
No of Employees	> 20 Yrs	33	9.4%
	11–25	174	49.7%
	26–50	73	20.9%
	51–100	63	18.0%
Position	101–200	40	11.4%
	Director/Owner	109	31.1%
	Senior Manager	156	44.6%
	Manager	74	21.1%
	Senior Officer/Executive	11	3.1%

Source: Authors

The responses were analysed according to demographic and company-wise information as shown in Table 2. Thus, 65.1% of respondents are males, and 34.9% are females. The

population's age group is between 20 to 60 years, and 85% represent the age between 31 and 50. More than 85% of them have bachelors degrees or higher qualifications. Furthermore, 44.6% of the respondents are Senior Managers, 31.1% are Directors/Owners, and 21.1% are Managers.

The majority of respondents are from the Western Province of Sri Lanka, which consists of three main districts. The responses were collected from more than 20 industries: 25.4% represent IT and related services; 10.9% were received from the consultancy and professional services; and 9.1% from the education and related services. Approximately 70% of companies have been in the business for more than 11 years. Only 13% have been in the business for less than five years.

Table 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	13.605	36.771	36.771	13.605	36.771	36.771	5.768	15.590	15.590
2	3.802	10.276	47.047	3.802	10.276	47.047	5.351	14.462	30.052
3	2.865	7.742	54.789	2.865	7.742	54.789	4.505	12.177	42.228
4	1.993	5.387	60.176	1.993	5.387	60.176	4.308	11.644	53.872
5	1.572	4.248	64.424	1.572	4.248	64.424	3.904	10.552	64.424

Source: Authors

Principal Component Analysis was used as the extraction method, since it is the most expedient way of extracting by using a total variance. Five components collectively explained the total cumulative variance of 64.424%, which was shown in Table 3. The Kaiser-Meyer-Olkin (KMO) value indicated the sampling adequacy: it was 0.931, which exceeded the threshold value of 0.6 (Howard, 2015).

Table 4. Rotated Component Matrix

Construct	Item	Component				
		1	2	3	4	5
Perceived Benefits	PB01	.624				
	PB03	.641				
	PB04	.627				
	PB05	.738				
	PB06	.759				
	PB07	.782				
	PB08	.569				

Construct	Item	Component				
		1	2	3	4	5
Transformational Leadership	TL01		.687			
	TL02		.786			
	TL03		.788			
	TL04		.809			
	TL05		.798			
	TL06		.801			
	TL07		.850			
	TL08		.799			
Competitive Pressure	CP01			.540		
	CP02			.729		
	CP03			.750		
	CP04			.762		
	CP05			.630		
	CP06			.717		
	CP07			.762		
	CP08			.644		
Adoption of E-commerce	AE01				.657	
	AE02				.706	
	AE03				.740	
	AE04				.690	
	AE05				.758	
	AE06				.755	
	AE07				.720	
	AE09				.571	
	AE10				.553	
	Organisational Performance	OP04				
OP05						.752
OP06						.797
OP07						.839
OP08						.727
Cronbach's Alpha	-	0.876	0.942	0.877	0.924	0.901

Source: Authors

Table 4 shows the factor loading; items were loaded into five components after the loss of a few items due to cross-loading and unloading. The Cronbach's alpha value of each construct was above 0.7.

Table 5 describes the reliability and validity of the measurement models. Cronbach's alpha and composite reliability (CR) measure the internal consistency in scale data, which exceeded the threshold values of each construct (Zainudin Awang, 2015). Moreover, the average variance explained (AVE) measures the construct validity, which exceeded the threshold value of 0.5 (Zainudin Awang, 2015).

Table 5. Reliability of Measurement Model

Construct	Alpha	CR	AVE
Perceived Benefits	0.876	0.881	0.516
Transformational Leadership	0.942	0.939	0.660
Competitive Pressure	0.875	0.879	0.514
Adoption of E-commerce	0.924	0.922	0.569
Organisational Performance	0.901	0.895	0.634

Source: Authors

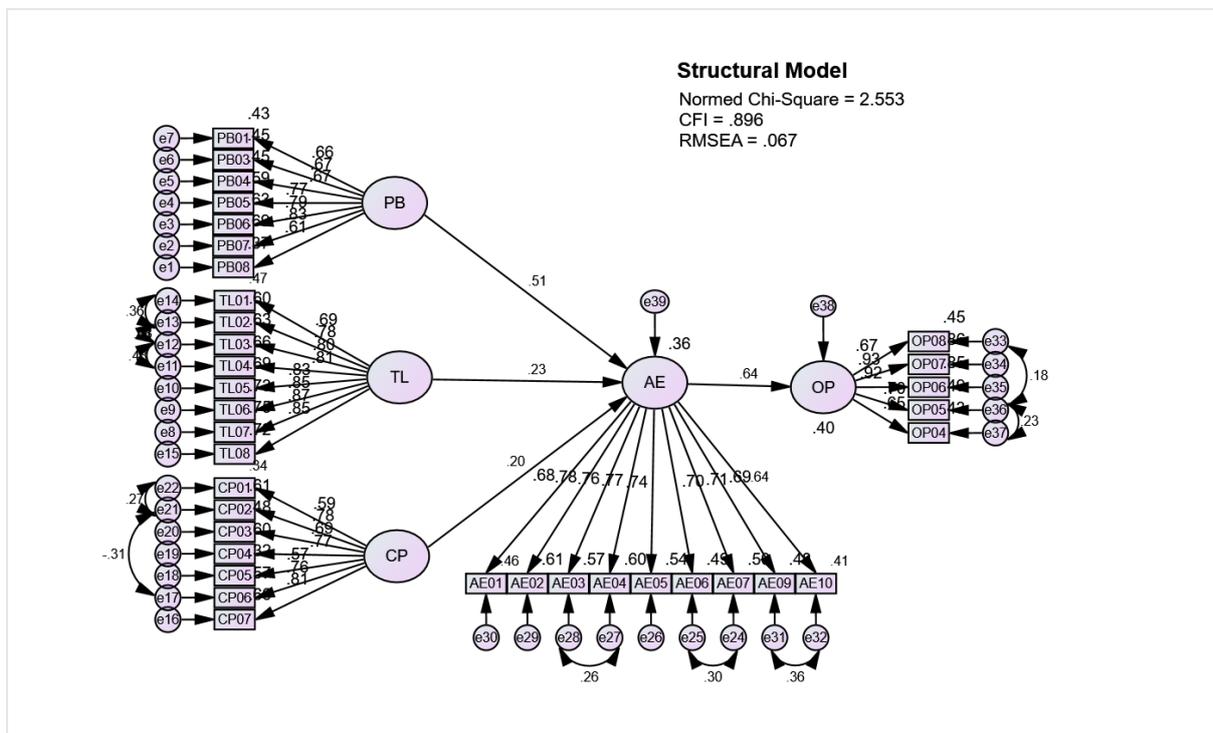


Figure 2. SEM Path Analysis (Source: Authors)

Figure 2 describes the structural model (Amos Diagram); all fitness categories of the model are in an acceptable range. Standardized beta values of perceived benefits (PB), transformational leadership (TL), and competitive pressure (CP) are 0.513 (actual beta: 0.632), 0.234 (actual beta: 0.163), and 0.196 (actual beta: 0.132), respectively. All predictor variables collectively explained 36% (R-squared) of the variance in the adoption of e-commerce (AE). Adoption of e-commerce (actual beta: 0.594) explained 40% (R-squared) of the variance of organisational performance (OP).

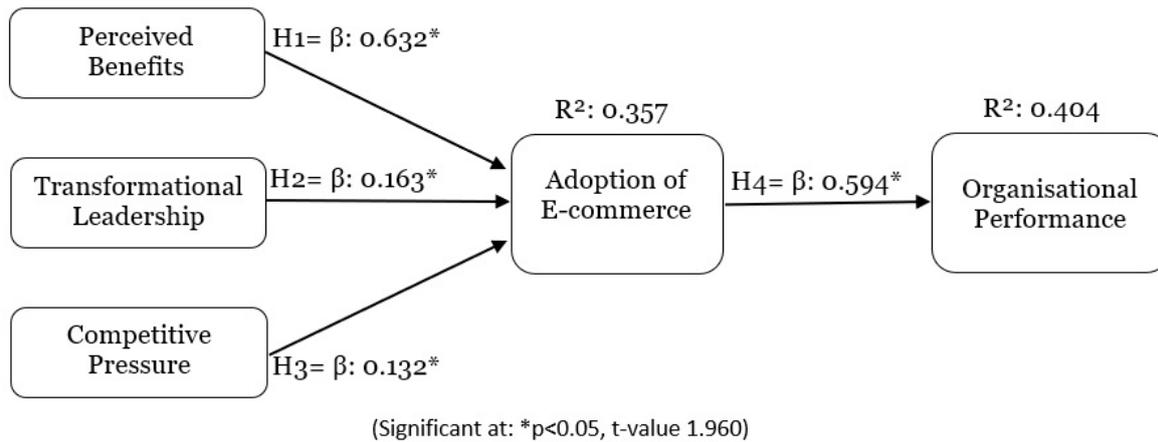


Figure 3. Adoption of E-commerce and its Impact on Organisational Performance of SMEs in Sri Lanka (Source: Authors)

Table 6. Regression Weights of the Structural Model

Hypothesis	Path	Actual Beta	SE	Critical Ratio	P-Value
H1	AE <--- PB	0.632*	0.084	7.501	0.000
H2	AE <--- TL	0.163*	0.036	4.579	0.000
H3	AE <--- CP	0.132*	0.035	3.798	0.000
H4	OP <--- AE	0.594*	0.066	8.962	0.000

Source: Authors (Significant at: * $p < 0.05$, t-value 1.960)

Figure 3 and Table 6 show the conceptualized model and regression weights of the structural model. All four hypotheses have achieved highly significant P-values (< 0.001) for all the relationships in the model. Perceived benefits, transformational leadership, and competitive pressure are the independent variables of the model. All these variables show a significant influence on the adoption of e-commerce. Furthermore, the adoption of e-commerce indicated a highly significant p-value (< 0.001) on organisational performance.

Discussion

The study aimed to identify the determinants affecting the adoption of e-commerce and its impact on the organisational performance of SMEs in Sri Lanka. Hence, the conceptualized model was developed using TOE and DOI theories to identify the level of influences between variables in the model. Four hypotheses were developed in total: three hypotheses were involved to measure the influence on e-commerce adoption, and one hypothesis has measured the influence of e-commerce adoption on the organisational performance of SMEs.

Table 7. Summary of Hypothesis Testing

Hypothesis	Statement	Actual Beta	P-Value	Results
H1	Perceived benefits influence the adoption of e-commerce among SMEs in Sri Lanka	0.632*	0.000	Supported
H2	Transformational Leadership Style influencing the adoption of e-commerce among SMEs in Sri Lanka	0.163*	0.000	Supported
H3	Competitive pressure influences the adoption of E-commerce among SMEs in Sri Lanka.	0.132*	0.000	Supported
H4	Adoption of e-commerce influencing the organisational performance of SMEs in Sri Lanka.	0.594*	0.000	Supported

Source: Authors (Significant at: * $p < 0.05$, t-value 1.960)

Table 7 shows the results of the hypothesis testing. Perceived benefit, transformational leadership, and competitive pressure were related to technological, organisational, and environmental contexts, respectively. As explained by Tornatzky & Fleischer (1990), TOE factors affect technological innovation in an organisation. Rogers (1995) explained how innovation characteristics and organisational characteristics influence technologically innovative adoption by an organisation. Thus, SEM path analysis (Figure 2) confirmed related theories. Nevertheless, Hypotheses 1, 2, and 3 tested the influence on e-commerce adoption, and p-values are highly significant ($p < 0.001$) on all paths. H4 tested the impact of the adoption of e-commerce on organisational performance and has shown a highly significant p-value ($p < 0.001$). Hence, all hypotheses are supported. Moreover, the study focused to find answers for two specific objectives.

Table 8. Objective Results

Objectives	Hypothesis	Summary	Results
a. To determine the most influencing factor which affects the adoption of e-commerce.	H1, H2, H3	<ul style="list-style-type: none"> The p-values are highly significant of all paths. Perceived benefits, transformational leadership, and competitive pressure collectively explained 36% (R-squared value) of the variance in the adoption of e-commerce. The highest estimated value was indicated by perceived benefits, which is 0.632. Hence, the perceived benefit was the most influencing factor. 	Achieved

Objectives	Hypothesis	Summary	Results
b. To examine the adoption of e-commerce impact on organisational performance.	H4	<ul style="list-style-type: none"> The p-value was highly significant. The adoption of e-commerce explained 40% (R-squared value) of the variance in organisational performance. The estimated value of 0.594 indicated between variables. 	Achieved

Source: Authors

Most influencing factor affecting e-commerce adoption

Perceived Benefits, Transformational Leadership, and Competitive Pressure influence the adoption of e-commerce in the model. The beta-values (estimate) are 0.632, 0.163, and 0.132, respectively. All these factors show highly significant p-values (<0.001) in the regression weights. All predictor variables collectively explained 36% ($R^2: 0.357$) of its variance in the adoption of e-commerce. Nevertheless, Sánchez-Torres, Rojas Berrío & Ortiz Rendón (2021) examined many factors that affect the e-commerce adoption in Colombian SMEs and discovered managerial characteristics, observability, relative advantage, and customer pressure significantly influenced e-commerce adoption, and the R^2 value was shown as 0.318. However, the perceptions of Colombian SMEs and Sri Lankan SMEs are similar in the adoption of e-commerce. The perceived benefit indicated the highest beta-value of 0.632, which shows that, when one unit of the perceived benefit goes up, the adoption of e-commerce goes up by 0.632 units (Zainuddin, 2015). Therefore, the most influencing factor on the adoption of e-commerce of SMEs in Sri Lanka was the perceived benefits.

Impact of e-commerce adoption on organisational performance

A highly significant p-value was indicated in the path between the adoption of e-commerce and organisational performance. The beta-value of the path is 0.594, and adoption of e-commerce is explained as 40% ($R^2: 0.404$) of the variance of organisational performance. Hence, it is concluded that the adoption of e-commerce impacts SMEs' organisational performance in Sri Lanka.

Furthermore, as described previously, perceived benefits represent the technological context of the model, and it refers to the degree of acceptance of the possible advantages that e-commerce technology can provide for the organisation (Alnaser, Saeed & Alrawashedh, 2018). Thus, it is one of the important factors in the technological perspective, whether the buyers or customers will accept the e-commerce platform and how far it will support the audience. This situation is one of the critical factors to gain a competitive advantage over the competitors in the global market. The transformational leadership style represents the framework's organisational context, and this is the leaders' perception towards innovative adoption in an

organisation ([Xie et al., 2018](#)). Therefore, the leader creates the adoptive culture within the organisation which drives it forward. The competitive pressure represents the environmental context, which comes from the outside world, increasing the competitive power to compete in the market. The organisation's performance was measured in the study in terms of financial and non-financial performance. The results concluded that the adoption of e-commerce is able to increase constant market growth, the number of transactions, sales volume, and profitability of SMEs.

Implications and Conclusions

Implication for practice

The study facilitates to find out the management perception of e-commerce adoption to their businesses as a business strategy. The managers assumed that e-commerce technology provides some value additions to their organisations, especially when expanding the marketing strategies, which simplify the work routing, improve communication process, and are easy to interact with global markets. Furthermore, the leadership style of managers is playing a significant and critical role when adopting e-commerce technology in organisations. This creates an adoptive culture within the organisation by demonstrating a high level of ethical and moral conduct, communicating the vision to be achieved, and emphasizing the need for technological innovation for the company's growth. Likewise, the intensity of rivalry among competitors in the industry can impose the adoption of e-commerce to survive in the market and gain a competitive advantage over the competitor.

Nevertheless, many entrepreneurs have changed their mindsets to adapt e-commerce as a remedy to overcome this COVID-19 crisis. This study helps entrepreneurs to identify the important areas when adopting e-commerce: it was statistically proved that e-commerce has the power to enhance the organisational performance of SMEs in Sri Lanka, which ultimately impacts the gross domestic product (GDP) of the country. Therefore, government and policymakers in Sri Lanka must set their policies and regulatory structures to support and encourage SMEs to adopt this innovative business strategy. Further, regulators must consider the implementation of the data protection act, cyber-security controls, and funds transfer policies to facilitate SMEs to expand their market penetration.

Implication for research

As discussed above, many studies have related to e-commerce adoption in a different context and have found different types of factors that influenced the adoption of e-commerce ([Sánchez-Torres, Rojas Berrío & Ortiz Rendón, 2021](#); [Ezzaouia & Bulchand-Gidumal, 2020](#); [Dahbi & Benmoussa, 2019](#)). However, [Ezzaouia & Bulchand-Gidumal \(2020\)](#) identified the

perceived benefits, individual characteristics, and external factors that significantly influenced the adoption of technology in the hospitality sector in Morocco. Moreover, Sánchez-Torres, Rojas Berrío & Ortiz Rendón (2021) examined many factors and found out that managerial characteristics, observability, relative advantage, and customer pressure significantly influenced the adoption of e-commerce in Colombian SMEs. Further, trading partner pressure, perceived usefulness, and top management support significantly influenced the social commerce adoption in Saudi Arabian SMEs (Abed, 2020).

Similarly, there are a few studies in the Sri Lankan context. Govinnage & Sachitra (2019) tested the adoption of e-commerce related to the retail sector and examined perceived benefits, computer literacy, government support, and technological infrastructure as predictors in the study: perceived benefits were not supported for the adoption of e-commerce. Kuruwitaarachchi *et al.* (2020) proposed a framework that affects e-commerce adoption and suggested testing information technology perspective, technology know-how, and network security as predictors of the adoption. Gunawardana (2018) examined e-commerce in SMEs in Sri Lanka and identified very basic levels of Internet usage by SMEs to communicate with each other, such as customer service, e-marketing, supplier services, and e-payment.

However, this study examined three variables as predictors of e-commerce adoption in Sri Lanka. Transformational leadership is not widely studied in similar studies, especially in the Sri Lankan context, and observed the e-commerce adoption affecting the organisational performance of SMEs in Sri Lanka as a modern business strategy.

Conclusion

The study aimed to identify the determinants affecting the adoption of e-commerce and its impact on the organisational performance of SMEs in Sri Lanka. After a critical review of the literature, perceived benefit, transformational leadership, and competitive pressure were identified as factors that could influence e-commerce adoption. After analysing the data, it was recognized that the perceived benefit is the most influencing factor of the adoption, and the other two factors also significantly influenced the adoption. Moreover, the adoption of e-commerce affects the organisational performance of SMEs in Sri Lanka. As a contribution, the study investigated the perception of management about e-commerce adoption and its benefits, which are vital to improving the technological development of SMEs in Sri Lanka.

Limitations and future research directions

Concerning the limitations, the study mainly focused on the SME sector in Sri Lanka. It is possible to study for a particular province, district, and different sectors. Further, many other factors affect e-commerce adoption, such as cybersecurity, cultural changers, Internet facility,

and Internet speed. These affect e-commerce adoption in developing countries. Similarly, it is important to investigate the moderating factors that affect the organisational performance of SMEs and examine the post-e-commerce adoption. Hence, it is open for future researchers to investigate those areas.

References

- Abed, S. S. (2020). Social commerce adoption using TOE framework: An empirical investigation of Saudi Arabian SMEs. *International Journal of Information Management*, 53, 102118. <https://doi.org/10.1016/j.ijinfomgt.2020.102118>
- Alnaser, A., Saeed, M., & Alrawashedh, N. (2018). Adoption of E-Commerce by SMEs and Its Impact on Customer Satisfaction. *Journal of Advanced Social Research*, 8(01), 01–14. Available at <https://www.researchgate.net/publication/323512473>
- Ammirato, S., Sofo, F., Felicetti, A. M., & Raso, C. (2019). A methodology to support the adoption of IoT innovation and its application to the Italian bank branch security context. *European Journal of Innovation Management*, 22(1), 146-174. <https://doi.org/10.1108/ejim-03-2018-0058>
- Bass, B. M. (1985). *Leadership and Performance beyond Expectations*. New York: Free Press.
- Chmielarz, W., & Parys, T. (2018). The Use of Mobile Technologies in e-Commerce. *Annales Universitatis Mariae Curie-Skłodowska, sectio H, Oeconomia*, 52(2), 17–30.
- COVID-19 and E-commerce: a global review. (n.d.). United Nations Conference on Trade and Development, 2021. Retrieved 31 July 2021 from <https://unctad.org/webflyer/covid-19-and-e-commerce-global-review>
- Dahbi, S., & Benmoussa, C. (2019). What Hinder SMEs from Adopting E-commerce? A Multiple Case Analysis. *Procedia Computer Science*, 158, 811–818. <https://doi.org/10.1016/j.procs.2019.09.118>
- Department of Census and Statistics. (n.d.). Economic Statistics of Sri Lanka, Ministry of Finance, Sri Lanka. <http://www.statistics.gov.lk/Publication/Economic-Statistic-2020>
- Durst, S., Hinteregger, C., & Zieba, M. (2019). The linkage between knowledge risk management and organisational performance. *Journal of Business Research*, 105, 1–10. <https://doi.org/10.1016/j.jbusres.2019.08.002>
- Ezzaouia, I., & Bulchand-Gidumal, J. (2020). Factors influencing the adoption of information technology in the hotel industry. An analysis in a developing country. *Tourism Management Perspectives*, 34, 100675. <https://doi.org/10.1016/j.tmp.2020.100675>
- Fonseka, K., Raman, M., Jaharadak, A. A., & Dharmaratne, I. R. (2020). Literature Review of Technology Adoption Models at Firm Level; Special Reference to E-Commerce Adoption. *Global Journal of Management and Business Research*, 20(6-B), 3136. <https://doi.org/10.34257/gjmbrbvol20is6pg1>
- Govinnage, D., & Sachitra, K. (2019). Factors Affecting E-commerce Adoption of Small and Medium Enterprises in Sri Lanka: Evidence from Retail Sector. *Asian Journal of*

- Advanced Research and Reports*, 6(2), 1-10. <https://doi.org/10.9734/ajarr/2019/v6i230147>
- Gunawardana, K. D. (2018). E-Commerce in Small and Medium Enterprises in Sri Lanka. *International Journal of Socio technology and Knowledge Development*, 10(2), 54–68. <https://doi.org/10.4018/ijskd.2018040104>
- Hadi Putra, P. O., & Santoso, H. B. (2020). Contextual factors and performance impact of e-business use in Indonesian small and medium enterprises (SMEs). *Heliyon*, 6(3), e03568. <https://doi.org/10.1016/j.heliyon.2020.e03568>
- Hickman, L., & Akdere, M. (2018). Effective leadership development in information technology: Building transformational and emergent leaders. *Industrial and Commercial Training*, 50(1), 1-9. <https://doi.org/10.1108/ict-06-2017-0039>
- Hidayati, R., Permatasari, R. K., & Fajry, A. N. (2019). Impact of Organizational Support and Technology Competence in E-Commerce Adoption on SMEs Performance in Jabodetabek Region. *Cendekia Niaga*, 3(1), 31–37. <https://doi.org/10.52391/jcn.v3i1.460>
- Howard, M. C. (2015). A Review of Exploratory Factor Analysis Decisions and Overview of Current Practices: What We Are Doing and How Can We Improve? *International Journal of Human-Computer Interaction*, 32(1), 51–62. <https://doi.org/10.1080/10447318.2015.1087664>
- Ibrahim, W., Turyakira, P., & Katumba, P. M. (2018). E-Commerce Adoption and Growth of SMEs in Uganda. *International Journal of Business and Management*, 14(1), 46. <https://doi.org/10.5539/ijbm.v14n1p46>
- Išoraitė, M., & Miniotienė, N. (2018). Electronic Commerce: Theory and Practice. *Integrated Journal of Business and Economics*, 2(2), 194–200. <https://doi.org/10.33019/ijbe.v2i2.78>
- Kuruwitaarachchi, N., Yajid, M. S. A., Khatibi, A., & Azam, S. M. F. (2020). Information Technology Factors Influence the Adoption to Ecommerce in Small and Medium Scale Organizations in Sri Lanka: A Research Agenda. *International Journal of E-Education, E-Business, E-Management and E-Learning*, 10(1), 95–103. <https://doi.org/10.17706/ijejee.2020.10.1.95-103>
- Lee, S. (2021). E-commerce adoption and effects on South Korean SMEs during the COVID-19 pandemic. *International Journal of Applied Sociology*, 11(1), 11–20. Retrieved 28 August 2021 from <https://article.sapub.org/10.5923/j.ijas.20211101.02.html>
- Mahliza, F. (2019). The Influence of E-commerce Adoption Using Social-Media Towards Business Performance of Micro Enterprises. *International Journal of Business, Economics and Law*, 18(5). Available at https://www.ijbel.com/wp-content/uploads/2019/07/ijbel5-VOL18_306.pdf
- Okundaye, K., Fan, S. K., & Dwyer, R. J. (2019). Impact of information and communication technology in Nigerian small-to medium-sized enterprises. *Journal of Economics, Finance and Administrative Science*, 24(47), 29–46. <https://doi.org/10.1108/jefas-08-2018-0086>

- Parasuraman, A. (2000). Technology Readiness Index (TRI): a Multiple-Item Scale to Measure Readiness to Embrace New Technologies. *Journal of Service Research*, 2(4), 307–320. <https://doi.org/10.1177/109467050024001>
- Rogers, E.M. (1995). *Diffusion of Innovations*. 4th Edition. New York: The Free Press.
- Sanchez-Torres, J. A., & Juarez-Acosta, F. (2019). Modelling SME e-commerce with IMAGES. *Journal of Business & Industrial Marketing*, 34(1), 137–149. <https://doi.org/10.1108/jbim-04-2018-0132>
- Sánchez-Torres, J. A., Rojas Berrío, S. P., & Ortiz Rendón, P. A. (2021). Adoption of E-commerce in SMEs: the Colombian Case. *Journal of Telecommunications and the Digital Economy*, 9(3), 110–135. <https://doi.org/10.18080/jtde.v9n3.403>
- Sattayaraksa, T., & Boon-Itt, S. (2018). The Roles of CEO Transformational Leadership and Organizational Factors on Product Innovation Performance. *European Journal of Innovation Management*, 21(2), 227–249. <https://doi.org/10.1108/ejim-06-2017-0077>
- Statista. E-Commerce — United States: Statista Market Forecast. (n.d.). Retrieved from <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>
- Tornatzky, L., & Fleischer, M. (1990). The processes of technological innovation, *The Journal of Technology Transfer*, 16(1), 45–46. <https://doi.org/10.1007/BF02371446>
- Vakulenko, Y., Shams, P., Hellström, D., & Hjort, K. (2019). Online retail experience and customer satisfaction: the mediating role of last-mile delivery. *The International Review of Retail, Distribution and Consumer Research*, 29(3), 306–320. <https://doi.org/10.1080/09593969.2019.1598466>
- Wen, L. Z., & Guy, H. A., (2019). Factors and Barriers to Adoption of E-Commerce: The Case of Developing Countries. *Journal of Entrepreneurship & Organization Management* 8, 265. <https://doi.org/10.4172/2169-026X.1000265>
- Xie, Y., Xue, W., Li, L., Wang, A., Chen, Y., Zheng, Q., Wang, Y., & Li, X. (2018). Leadership style and innovation atmosphere in enterprises: An empirical study. *Technological Forecasting and Social Change*, 135, 257–265. <https://doi.org/10.1016/j.techfore.2018.05.017>
- Xuhua, H., Chosniel Elikem, O., & Akaba, S. (2019). Effects of Business-to-Business E-commerce Adoption on Competitive Advantage of Small and Medium-Sized Manufacturing Enterprises. *Economics & Sociology*, 12(1), 80–99. <https://doi.org/10.14254/2071-789x.2019/12-1/4>
- Zainudin Awang. (2015). *Structural Equation Modeling Using AMOS Graphic*. Shah Alam: UiTM Press.